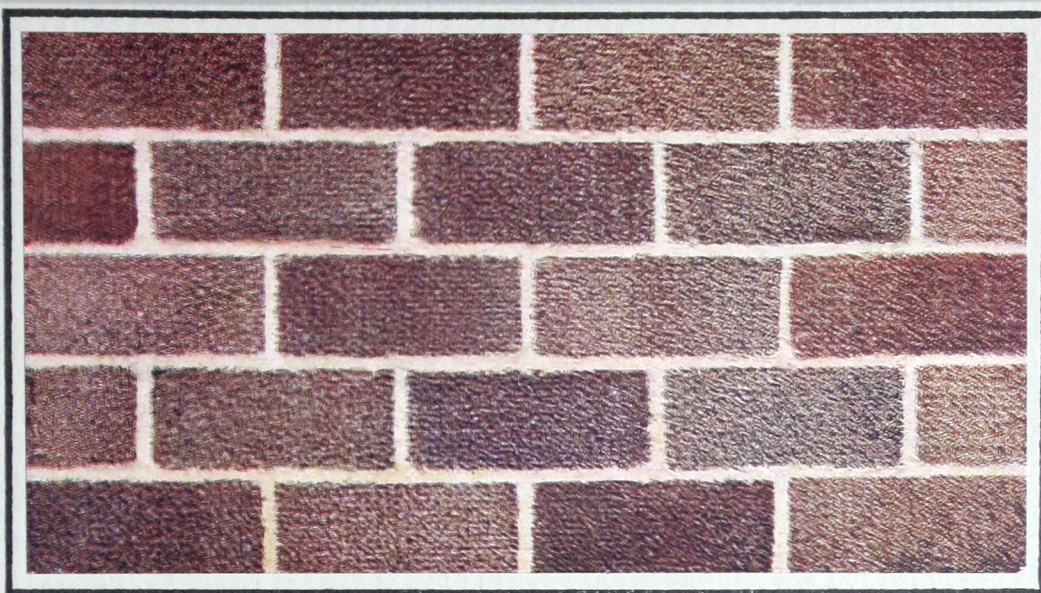


276-3.



*Hollow Building Blocks*

# NATCO TEX-TILE

DOUBLE SHELL LOAD BEARING

BULLETIN NUMBER 177







276-3.

JUN 30 '27

# NATCO TEX-TILE

**DOUBLE SHELL LOAD BEARING**



**NATIONAL FIRE PROOFING COMPANY**

GENERAL OFFICES: FULTON BUILDING, PITTSBURGH, PA.

CHICAGO  
26th and Shields Avenue

NEW YORK  
Flatiron Building

PHILADELPHIA  
Land Title Building

BOSTON  
Textile Building

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# NATCO HOLLOW TILE FOR EVERY TYPE OF BUILDING



One of a group of Natco Tex-Tile homes at Riverside, Ill.



Home and garage of Natco Tex-Tile at Girard, Ill.



A home of Natco Unglazed Double Shell Tile at Rosemont, Va.



Natco Tex-Tile is well adapted for this colonial type home at Swissvale, Pa.

HOMES OF NATCO GLAZED DOUBLE SHELL TEX-TILE ARE A SOURCE OF INCREASING COMFORT, SATISFACTION AND ECONOMY IN THE YEARS TO COME. THEY ARE EASIER TO SELL, RENT OR MORTGAGE AND PRODUCE THE BEST POSSIBLE RETURNS FROM THE INVESTMENT.

321 49619-4807



## *Purpose of this Bulletin*

**T**HIS Bulletin, treating on the various types of Natco Double Shell Tile, is a complete text book for the guidance of contractors, architects and builders of all kinds. The methods illustrated and described, represent the work as approved by contractors and architects, having been determined by wide practical experience in hollow tile construction.

For attractive, durable, fire safe homes, which are low in upkeep, as well as first cost, Natco Glazed Double Shell Tex-Tile and Natco Unglazed Combed Face Double Shell Tile are being used more and more every year. The large units of tile are light and can be laid quickly and economically. The clay tile resists fire and decay, preserving the beauty of the home for future generations and at the same time saving endless repair and painting expenses.

For commercial and industrial buildings of all kinds, Natco Glazed Combed Face Double Shell Tile is fast becoming recognized as a standard building material for that type of construction.

*A home at Camp Taylor, Kentucky,  
which illustrates how readily Natco  
Glazed Tex-Tile adapts itself to  
any architectural treatment.*





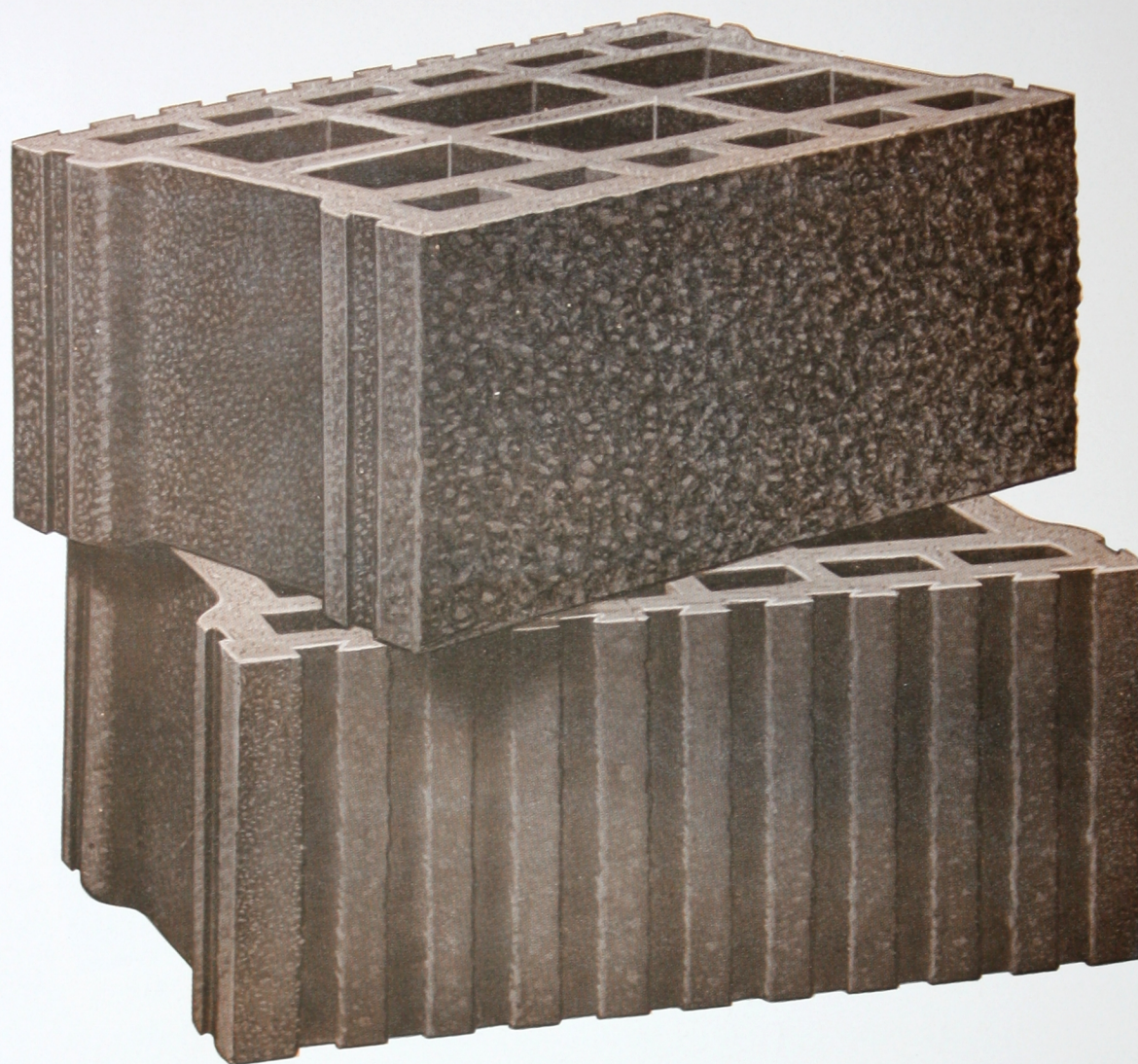


FIG. 1

Natco Double Shell Tex-Tile 8" x 12" x 5" for 8" walls only. Furnished with 12" x 5" glazed texture exterior surface and interior surface dovetailed for plaster.

*N*ATCO Glazed Double Shell Tex-Tile, with its beautiful and attractive texture face and dark, rich brownish shades, makes a particularly inviting and friendly home. The range of colors in which it is furnished is extremely pleasing.

It is furnished in one standard unit with an exterior and interior face 12 inches long by 5 inches high for 8 inch walls. Tile of this size weighs approximately 18 pounds and displaces 6 common brick. It is readily handled and laid at a cost of about 30 per cent less than brick for both labor and material.

You will see by looking over the pages of

details which follow, that we furnish special shapes and sizes to take care of lintels, sills, corners, window and door openings, joist and soldier courses, water tables, etc. This does away with expensive cutting and fitting and adds greatly to the speed with which it can be handled and laid.

To appear to best advantage, Natco Glazed Tex-Tile should be set in  $\frac{3}{8}$  inch mortar joints. When thus laid, 2.15 tile builds up approximately one square foot of wall surface. In designing buildings, it is an easy matter to locate openings, etc., so as to employ the standard units, which are made in two lengths, 12 inch and  $5\frac{3}{4}$  inch, see tables on page 17.



# NATCO HOLLOW TILE FOR EVERY TYPE OF BUILDING



FIG. 2

View of corner section of Natco Glazed Double Shell Tex-Tile showing advantages of double shell construction. Note particularly special corner tile, wide double shells, vertical still air spaces and broken mortar joints.

WITH Natco Glazed Tex-Tile, the wide double shells make it easy to spread mortar on both the horizontal and vertical mortar joints. Natco double shell construction breaks all mortar joints between the inner and outer shells, preventing heat, cold and moisture from penetrating the walls.

Natco Glazed Tex-Tile is extremely economical to use, is durable and fire-safe, and never requires any painting, covering of stucco or repairs. It represents the utmost in enduring strength. With Natco Tex-Tile walls, a home is safe against fire, neither can dampness, temperature changes or age cause the slightest deterioration. It is warmer in winter and cooler in summer, because the double shell construction completely insulates the building with a blanket of still air.

The detail pages which follow show different sizes and shapes in which Natco Tex-Tile is furnished. All are designed for speedy and economical construction.

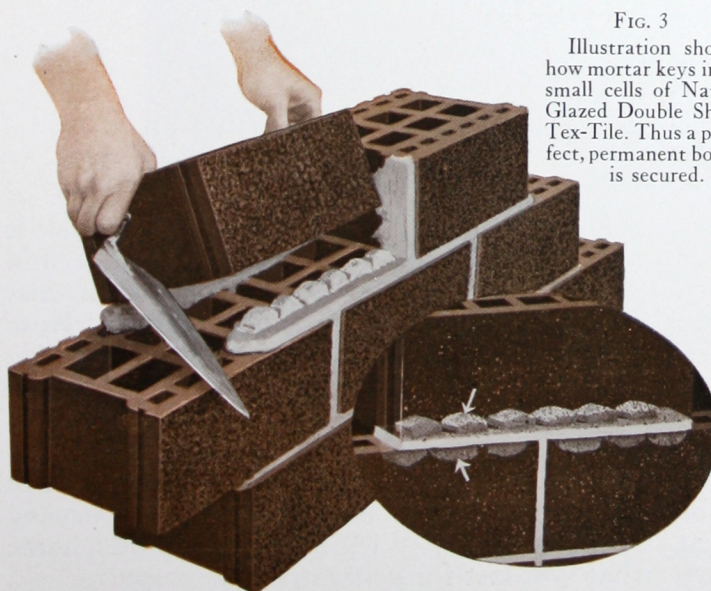


FIG. 3

Illustration shows how mortar keys into small cells of Natco Glazed Double Shell Tex-Tile. Thus a perfect, permanent bond is secured.



FIG. 4

End view of Natco Tex-Tile wall. Note how effectively mortar joints are broken. Heat, cold and moisture can never penetrate the walls.



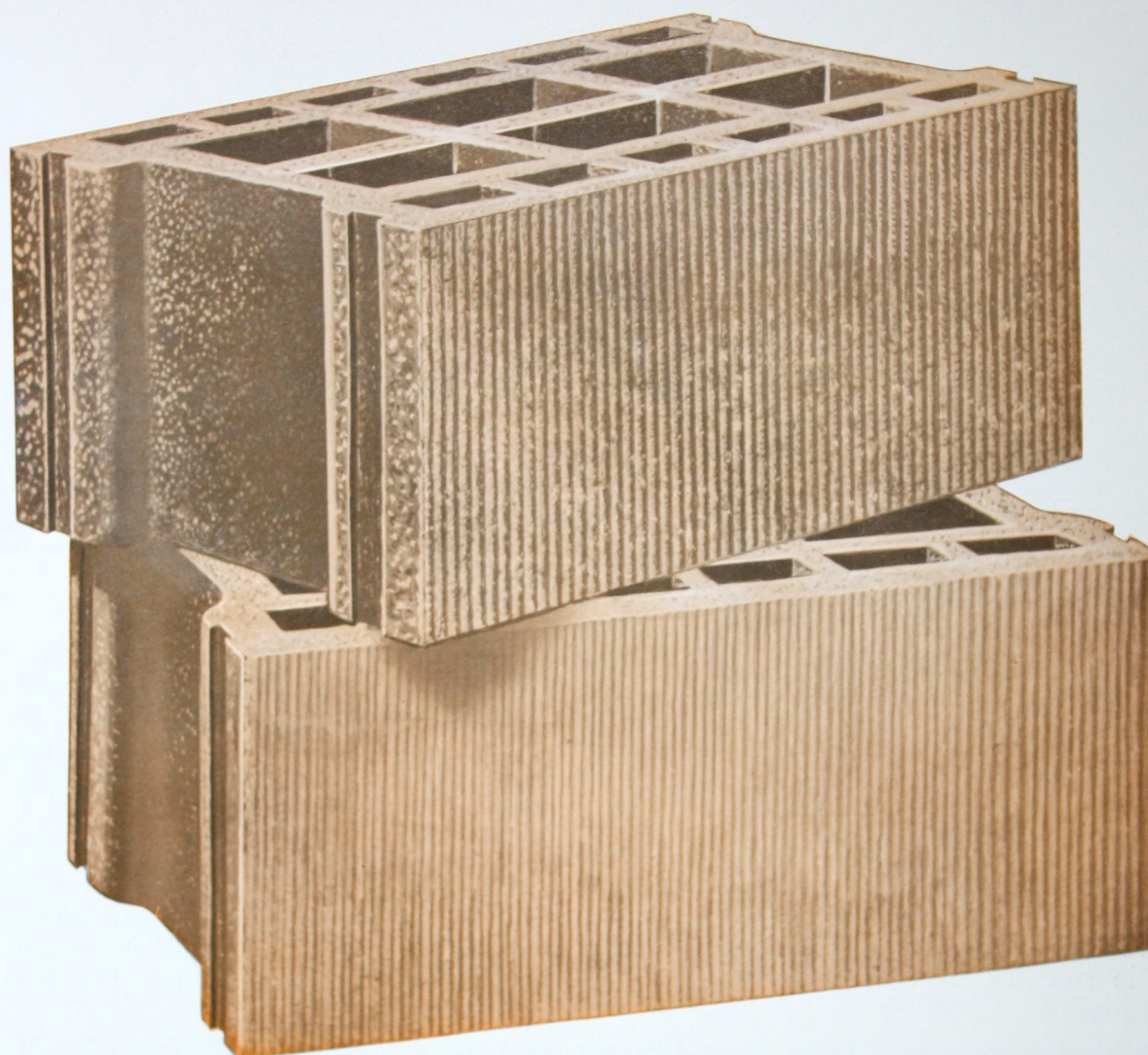


FIG. 5

Natco Unglazed Combed Face Double Shell Tile

8" x 12" x 5" for 8" walls.

6" x 12" x 5" for 6" walls.

In both sizes, the two 5" x 12" faces are combed as above.

(6" tile does not have center web. See Fig. 27.)

**I**N variety of color and general appearance, Natco Unglazed Comb Face Double Shell Tile is somewhat similar to scratch face or tapestry brick. It is supplied with two combed faces, 5 x 12 inches, for walls 6 and 8 inches thick. The better of the two faces is used for the exterior surface, while the interior face is especially suitable for the application of the plaster. There is no danger of the plaster becoming damp or peeling off. The large units are quickly and easily laid at great savings over other forms of masonry

construction. A home of this material is attractive in every way, resists fire, vermin and decay, and is also insulated against changes of temperature and dampness. Note particularly the detail pages which follow. The special shapes and sizes make it possible for you to build an enduring and attractive home with great savings in time, labor and mortar. Natco Unglazed Combed Face Double Shell Tile is furnished in a pleasing range of colors. With it you can build a home that will last for generations to come.



## For Public and Commercial Buildings

**N**ATCO Glazed Double Shell Tile, with an attractive, combed exterior wall surface and smooth, impervious interior, is ideally suited for public and private garages, factory, mill, mine and railroad buildings, cold storage plants, nurseries, warehouses, laundries, dry cleaning establishments, filling stations and all types of farm buildings. Here a material is required that is not only

quickly and easily erected, fire safe, sanitary, free from painting and repairs, but also low in first cost. No interior plaster or exterior stucco is required. Once erected, the building lasts for generations with little or no depreciation. The detail pages which follow give the sizes [and shapes in which Natco Glazed Double Shell Tile is furnished. All are designed for rapid and economical construction.

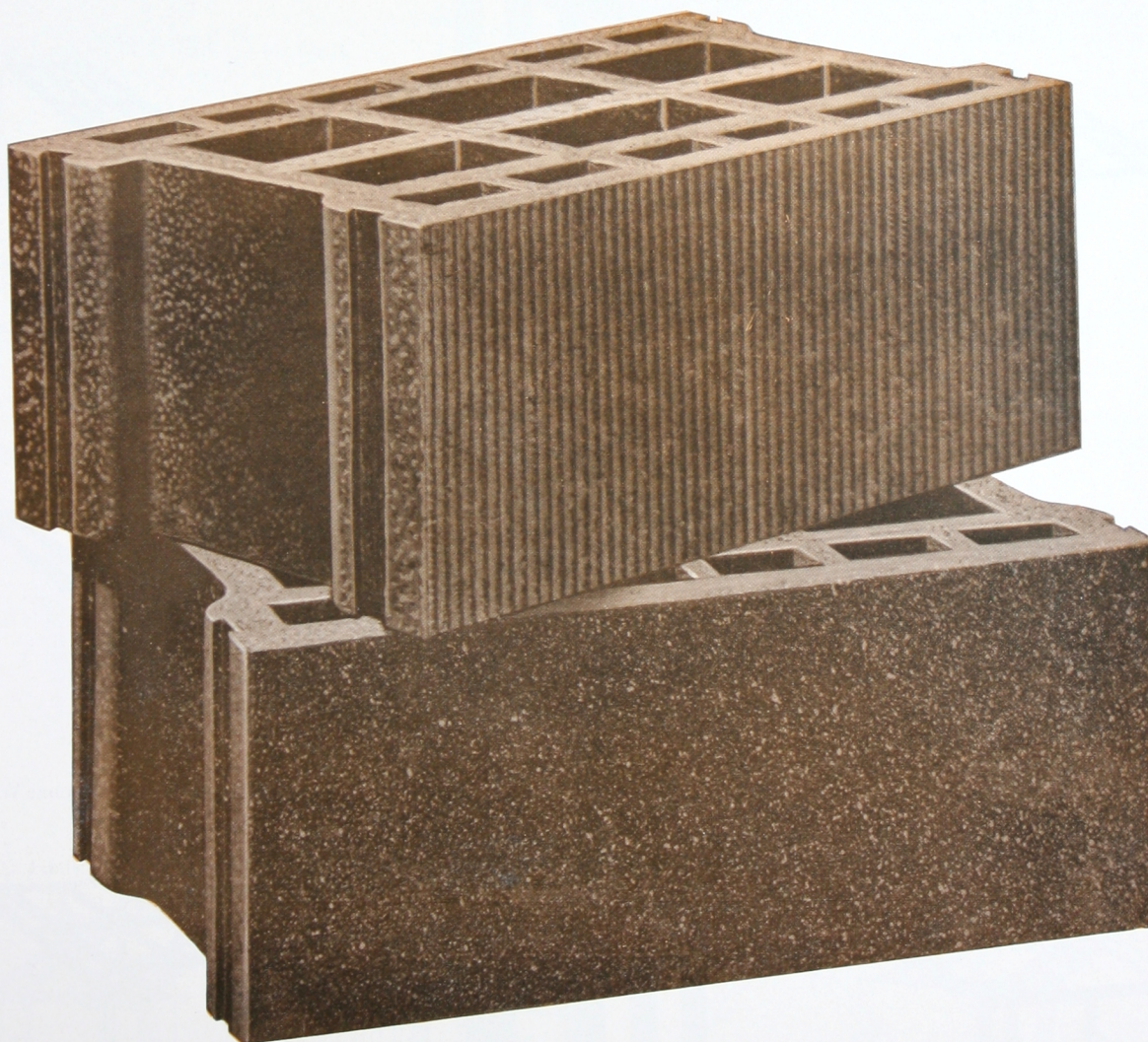


FIG. 6

Natco Glazed Double Shell Tile.

8" x 12" x 5" for 8" walls.

6" x 12" x 5" for 6" walls.

In both sizes, the outside 5" x 12" face is glazed combed and the inside 5" x 12" face is smooth glazed. (6" tile does not have center web. See Fig. 27.)



# Details of Shapes and Sizes of Natco Double Shell Face Tile

(Available for Natco Glazed Tex-Tile, Natco Glazed Combed Face Tile and Natco Unglazed Combed Face Tile.)

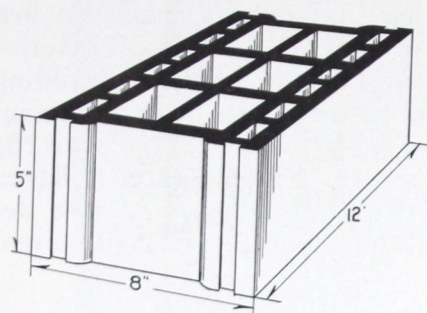


FIG. 7  
8" Wall Tile

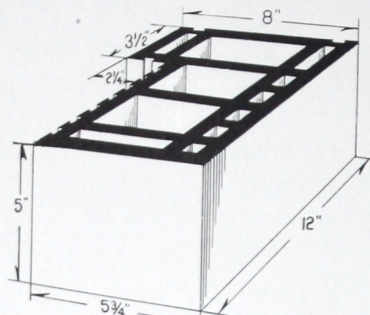


FIG. 8  
8" Corner

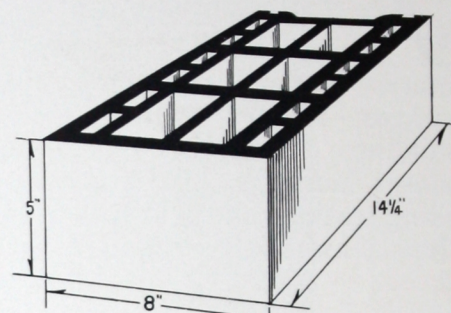


FIG. 9  
8" Inside Corner

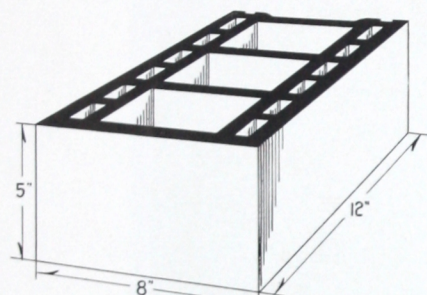


FIG. 10  
8" Closure

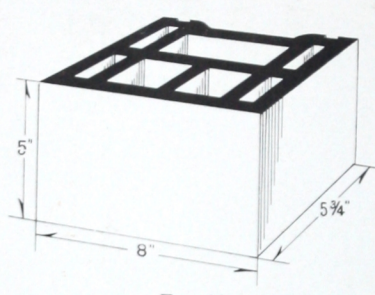


FIG. 11  
8" Half Closure

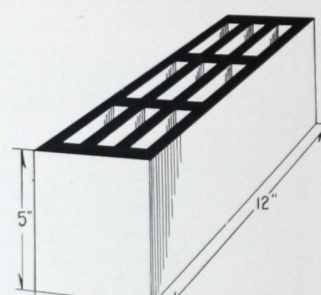


FIG. 12  
4" Joist Closure

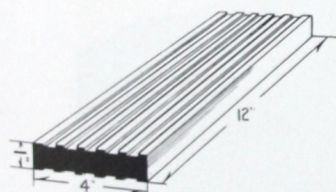


FIG. 13  
1" Joist Bearing Slab.

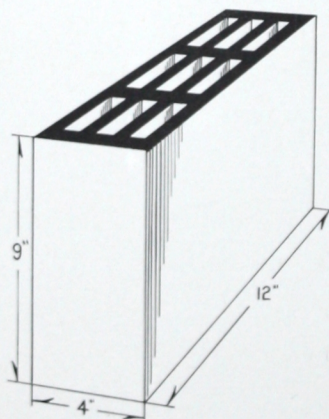


FIG. 14  
4" Joist Filler

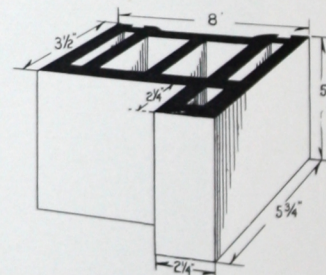


FIG. 15  
8" Half Jamb for Box Frame Windows

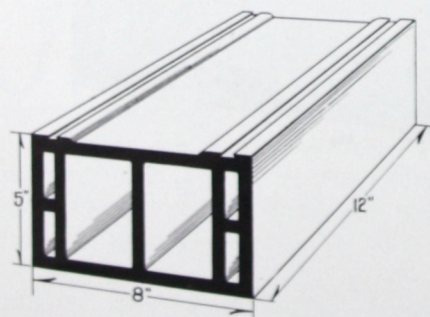


FIG. 16  
8" Straight Lintel

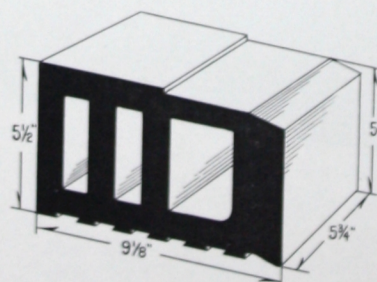


FIG. 17  
8" Sill Tile

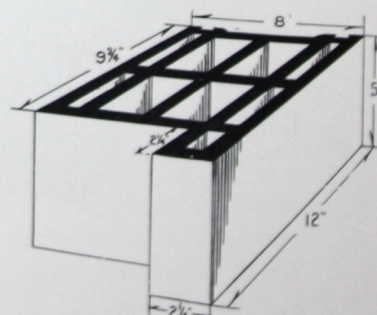


FIG. 18  
8" Full Jamb for Box Frame Windows



## Details of Shapes and Sizes of Natco Double Shell Face Tile (Continued)

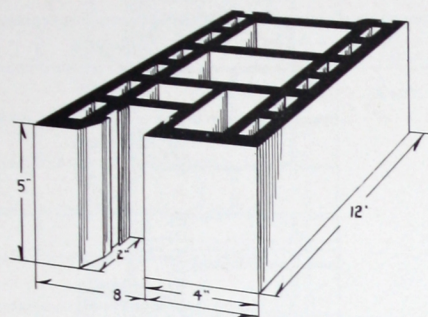


FIG. 19  
8" Full Jamb for Steel Sash and for Plank Frame Windows and Doors

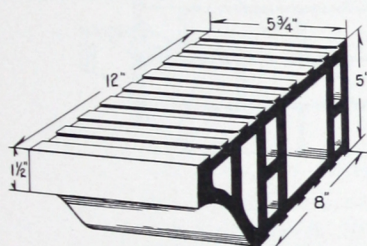


FIG. 23  
CORBEL TILE  
Made in glazed or unglazed combed face only

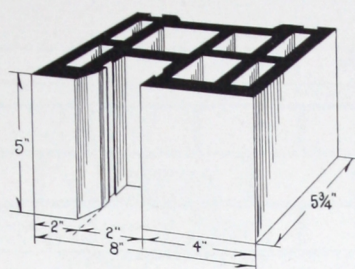


FIG. 20  
8" Half Jamb for Steel Sash and for Plank Frame Windows and Doors

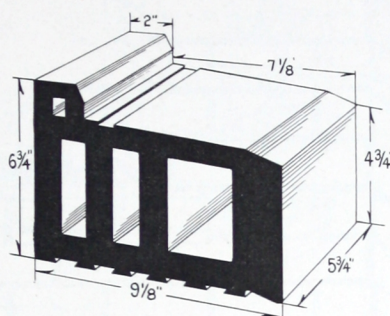


FIG. 22  
8" Sill for Steel Sash

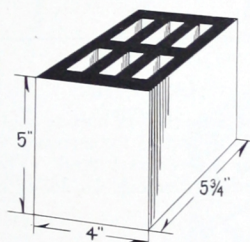


FIG. 24  
Pilaster Tile

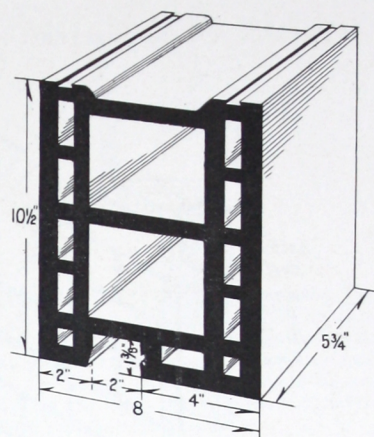


FIG. 21  
8" Soldier Lintel for Steel Sash. (Note: This lintel is also used extensively with wood frame windows and for soldier courses.)

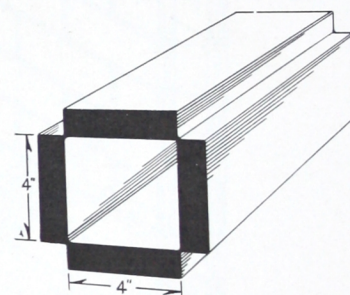


FIG. 25  
Nest of 1" Joist Bearing Slabs, showing manner in which they are shipped

## Details of Shapes and Sizes of 6" Natco Double Shell Tile, Glazed or Unglazed Combed Face Only

NOTE: Natco Tex-Tile is furnished for 8" walls only. The only 6" wall tile shapes furnished are those shown below.

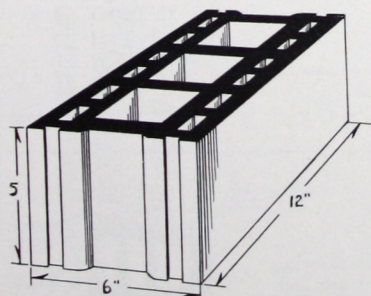


FIG. 27  
6" Wall Tile.

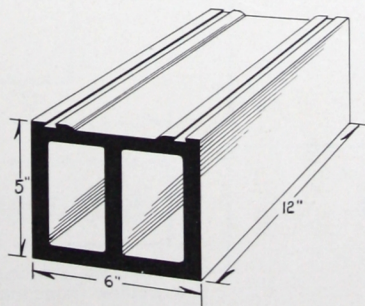


FIG. 28  
6" Lintel

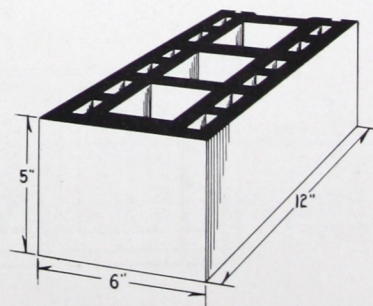


FIG. 29  
6" Combination Closure and Corner

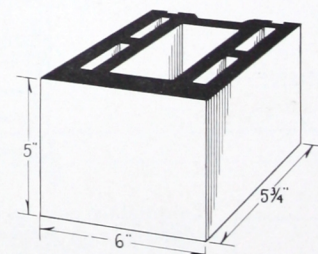


FIG. 26  
6" Half Closure



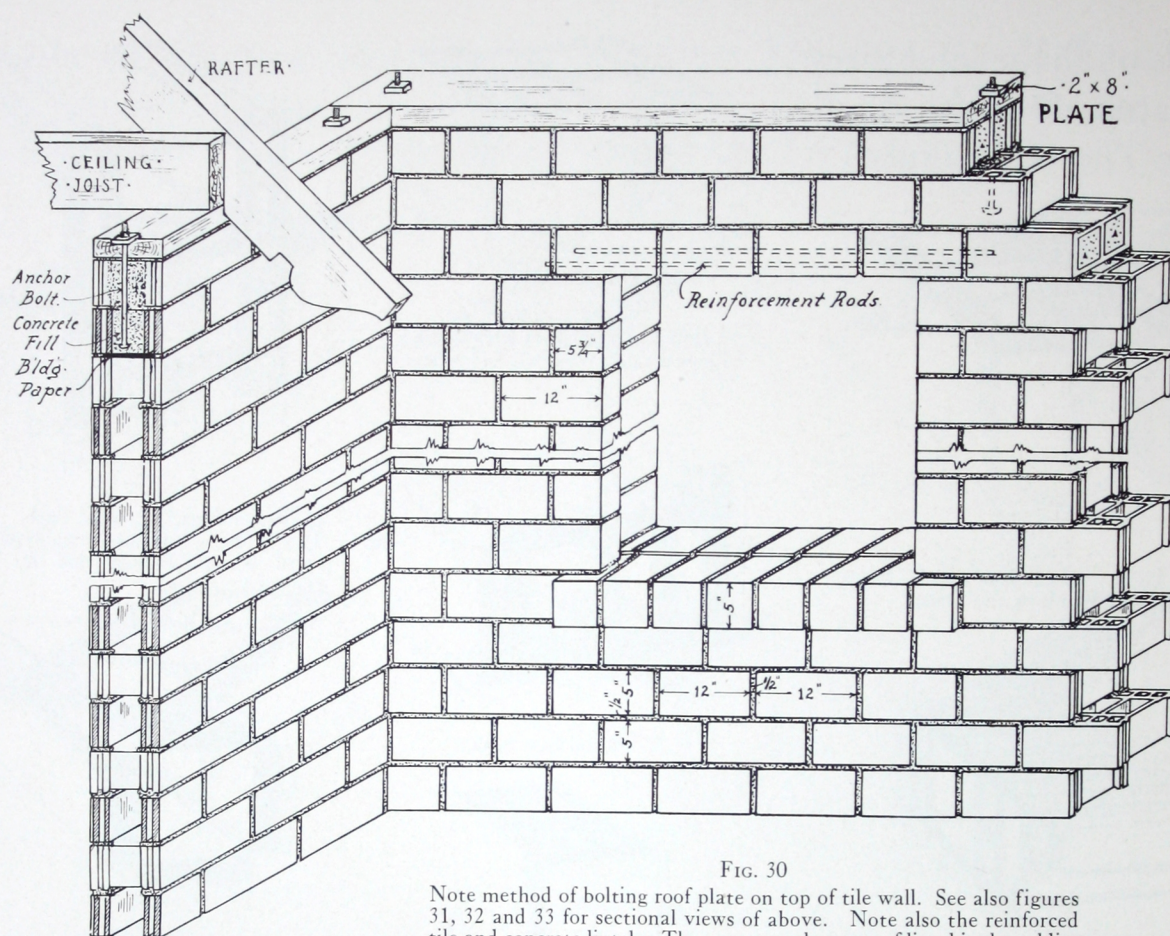


FIG. 30

Note method of bolting roof plate on top of tile wall. See also figures 31, 32 and 33 for sectional views of above. Note also the reinforced tile and concrete lintel. The more popular type of lintel is the soldier lintel. See Fig. 21, 38, 39 and 42.

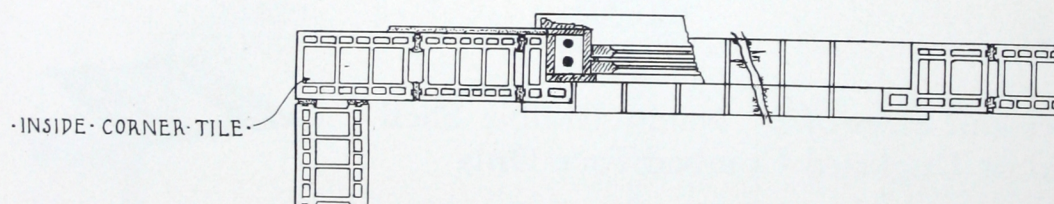


FIG. 31

Longitudinal cross section of wall shown in Fig. 30. Note jamb tile which provides space for sash weight box. Note the inside corner construction. This type of corner is required in ell shaped walls only.

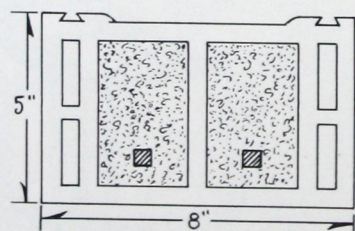


FIG. 32

Flat lintel showing reinforcing rods and concrete in both cells of tile. See Fig. 30.

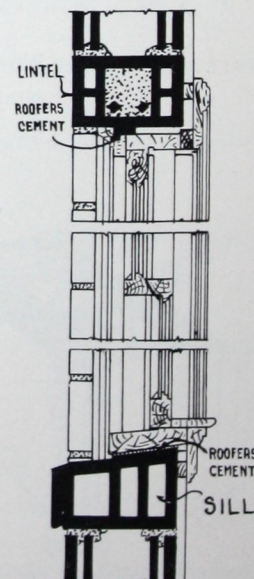


FIG. 33

Cross section through window showing how window frame fits at lintel and sill. For an absolutely weather proof job use roofers cement to seal between frame and tile.



# NATCO HOLLOW TILE FOR EVERY TYPE OF BUILDING

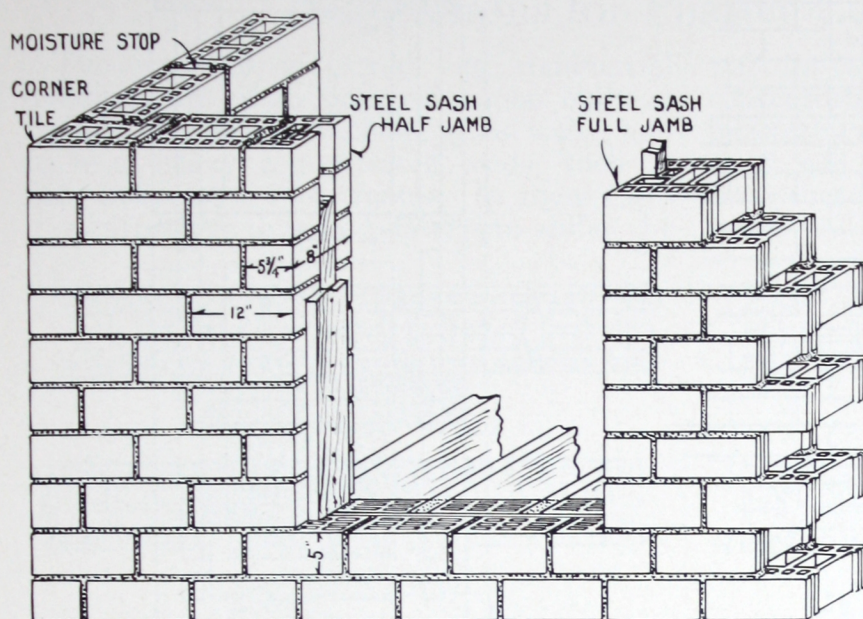


FIG. 34

Shows ordinary outside corner construction. (See Fig. 2.) Also shows method of making an absolutely weatherproof joint between tile and plank frame by using a strip of wood which has been nailed to the frame. This strip should fit into the recess in the tile. This method is recommended for all plank frames.

FIG. 35

Shows method of building wood joists in wall. Joist closure tile are used for the exterior 4" of wall and by using 1" tile slabs bedded in mortar for the joists to rest on, the joists get a solid and flat bearing surface and the load is evenly distributed. The space between joists is filled with joist filler tile to make a solid wall to top of joists. Joists may be spaced as desired. Illustration shows joists 14 inches on centers.

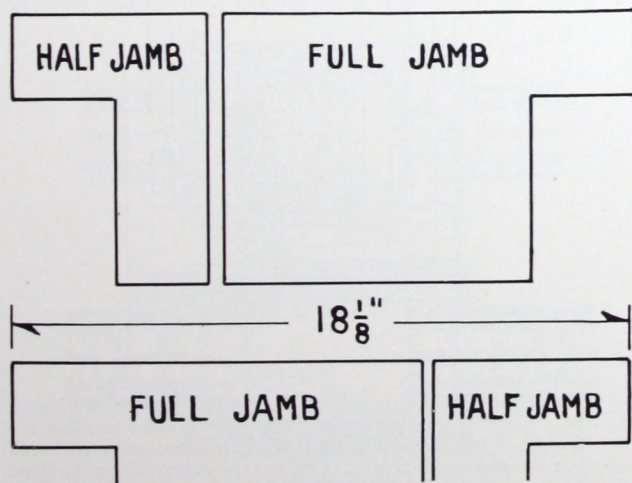
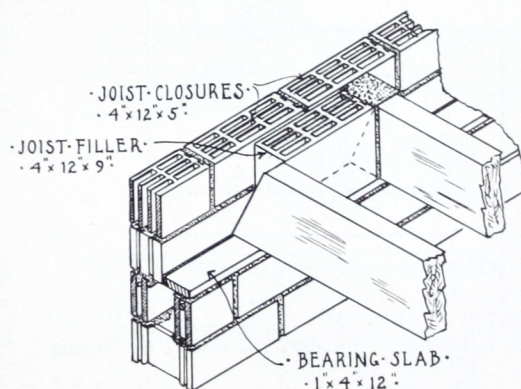


FIG. 36

Alternate courses showing the minimum distance between two windows.

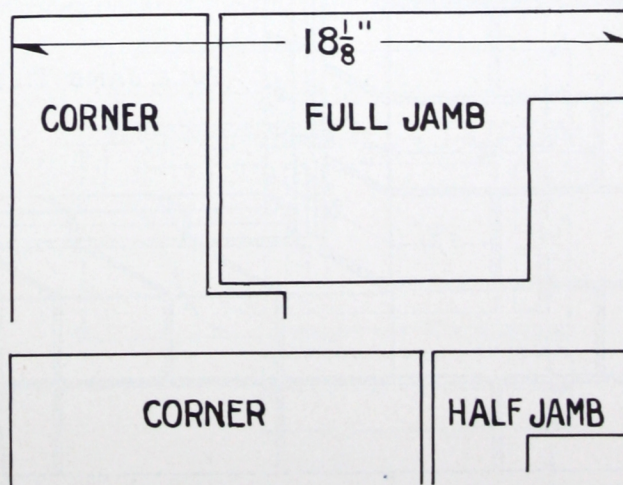


FIG. 37

This detail shows the minimum distance from corner of building to nearest window without cutting of tile. Alternate courses shown.



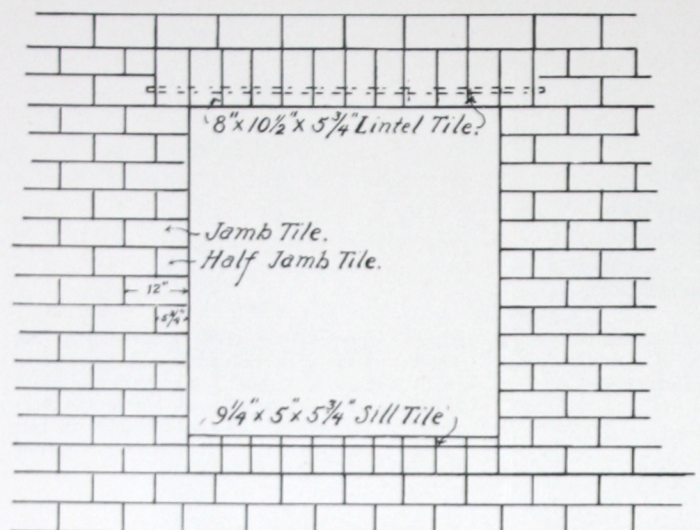


FIG. 38

Window opening showing soldier lintel. See Fig. 21. Can also be reinforced with angle iron as shown in Fig. 42.

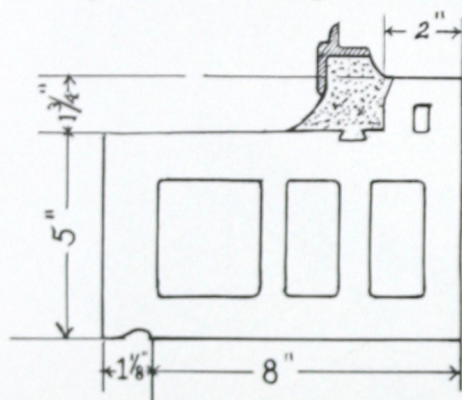


FIG. 40

Steel sash mortared to sill tile. Note dove tail scoring for holding mortar.

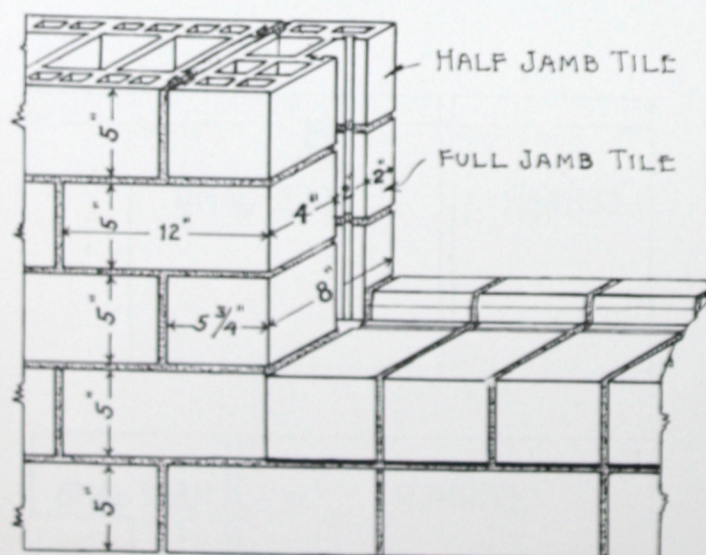


FIG. 41

Detail of opening for steel sash. Note recess in full and half steel sash jamb tile. See Fig. 39 and 40 for method of bedding sash.

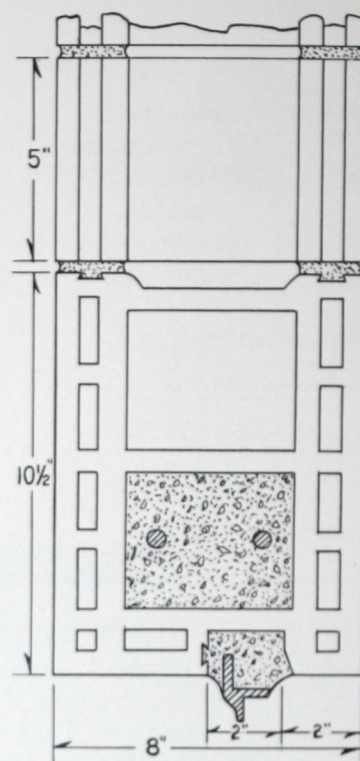


FIG. 39

Detail of lintel showing reinforced concrete beam in cell of tile and also method of bedding steel sash frame in the recess in steel sash lintel tile.

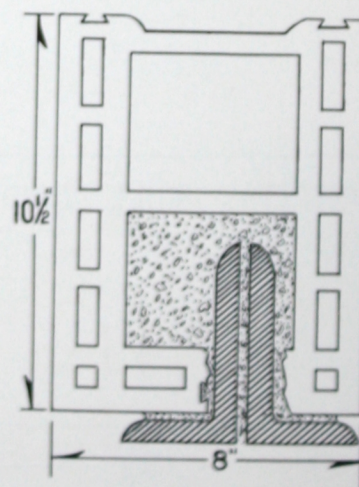


FIG. 42

A method of reinforcing lintels over wide openings or where a heavy load bears above the openings. In order to allow the flanges of angles to go inside the tile, it is necessary to break out the small web of tile. This is very easily and safely done by tapping the web lightly with a hammer, breaking it out in small pieces until the web has been tapped out about half the length of the tile—then start at other end of tile and work to the middle.



## Suggestions for Pilaster Construction

The walls of industrial and commercial buildings are often designed to be built to considerable height without cross walls, and to bear heavy concentrated loads, such as floor beams and roof trusses. In these cases it is customary to build pilasters to stiffen the

wall for wind pressure, and to carry these concentrated loads. Below are shown several pilaster layouts, and our engineering department will gladly furnish others if needed. Note that all pilasters are thoroughly bonded in the wall.

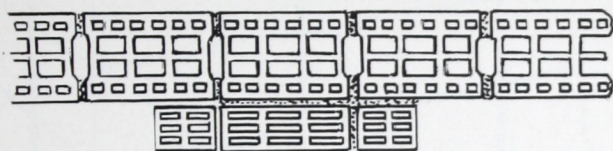


FIG. 43

Alternate courses of a pilaster 24½" wide with 4½" projection.

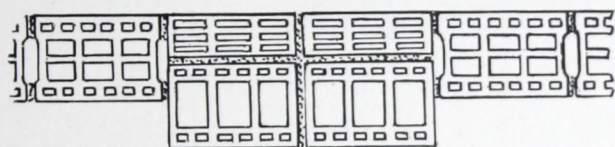


FIG. 44

Alternate courses of a pilaster 18½" wide with 4½" projection.

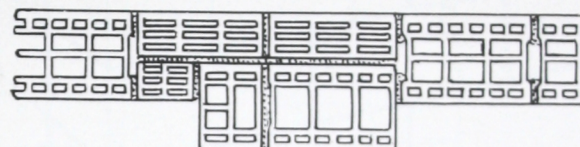


FIG. 45

Alternate courses of a pilaster 18½" wide with 8½" projection.

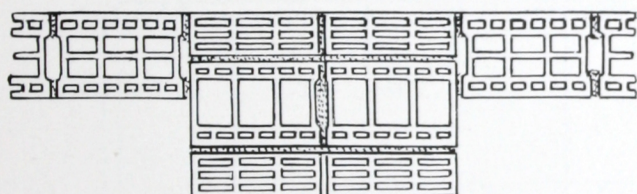


FIG. 46

Alternate courses of a pilaster 24½" wide with 8½" projection.

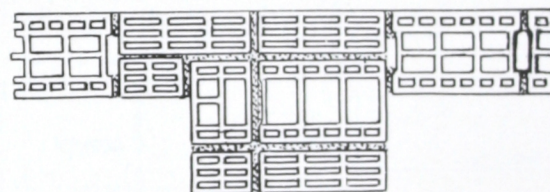


FIG. 47

Alternate courses of a pilaster 18½" wide with 8½" projection.

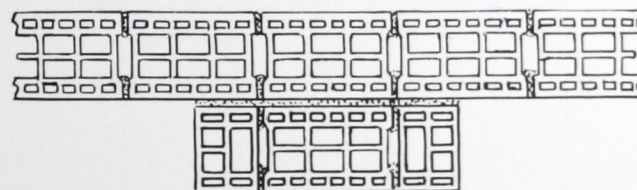


FIG. 47 & 48

Alternate courses showing method of enclosing H column. Gives a true bond. Our engineering department will gladly furnish layout for enclosing other sizes of columns.

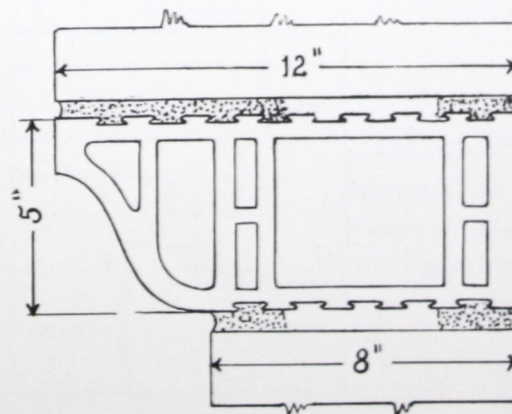
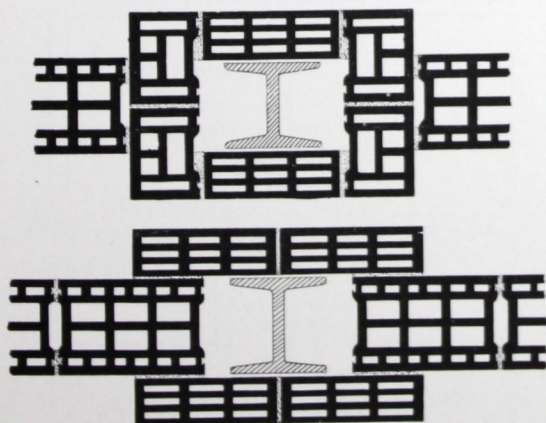


FIG. 49

Corbel Tile. See Fig. 23. Used for ornamenting top course of walls of commercial and industrial buildings. On top of corbel tile is usually placed wall coping or concrete slab. Corbel tile is furnished only with glazed or unglazed combed face. (Not furnished with texture face.)



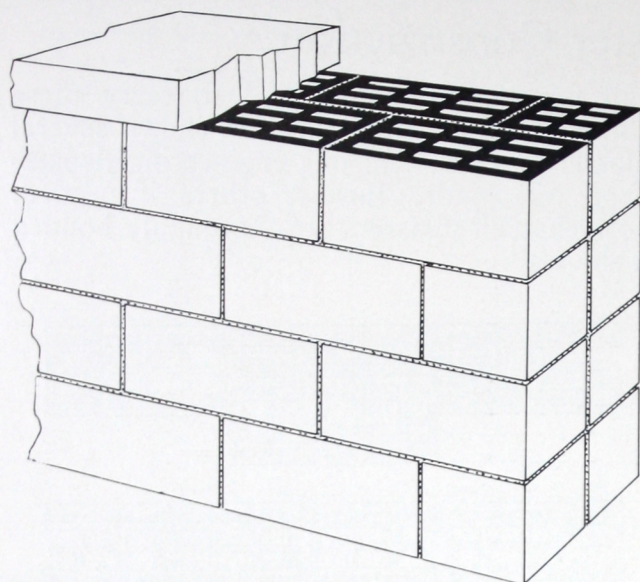


FIG. 50

Detail of porch balustrade built of joist closures laid back to back with staggered mortar joints. This gives a finished face on each side and on the end.

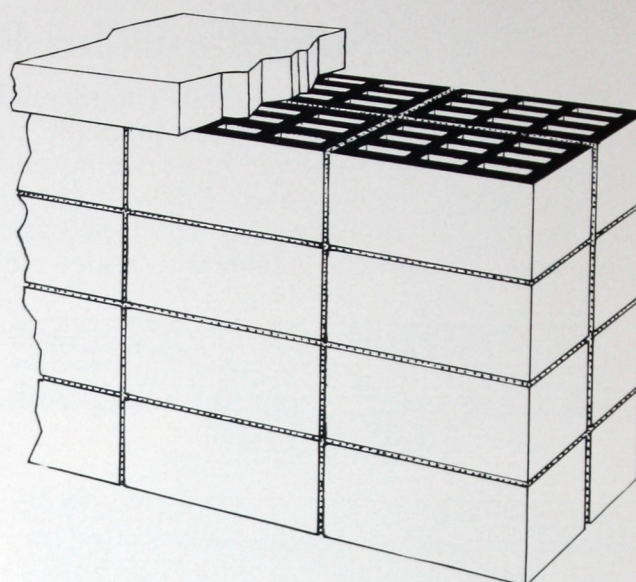
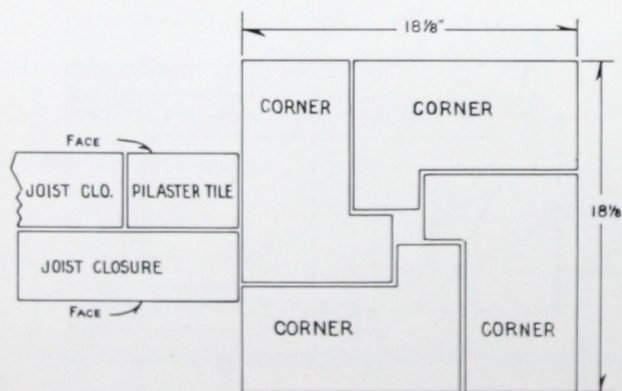
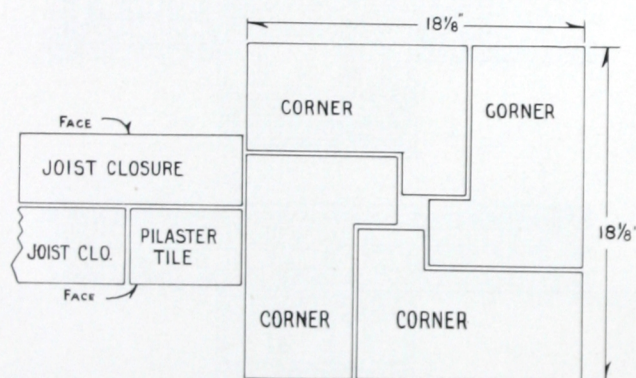


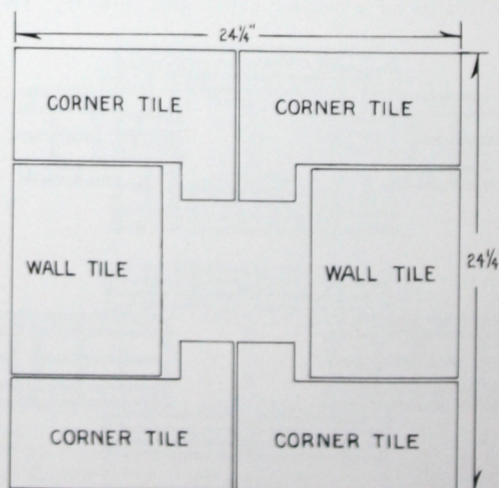
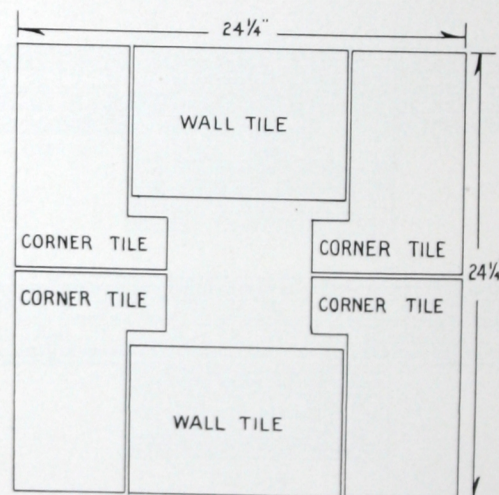
FIG. 51

Detail of porch balustrade built of joist closures back to back with mortar joints in line. This gives a finished face on each side and on the end. This construction is very popular for balustrades.



FIGS. 52 & 53

Alternate courses of a porch column and balustrade. This is the smallest column that can be built with finished faces on all four sides and true bonding of tile. Both sides of balustrade have finished faces. (See Fig. 50 & 51).



FIGS. 54 & 55

Details of alternate courses of a 24 1/4 inch square column. Our engineering department will gladly furnish layouts of larger size columns on request



## Suggestions for Bay Windows, Chimneys, Etc.

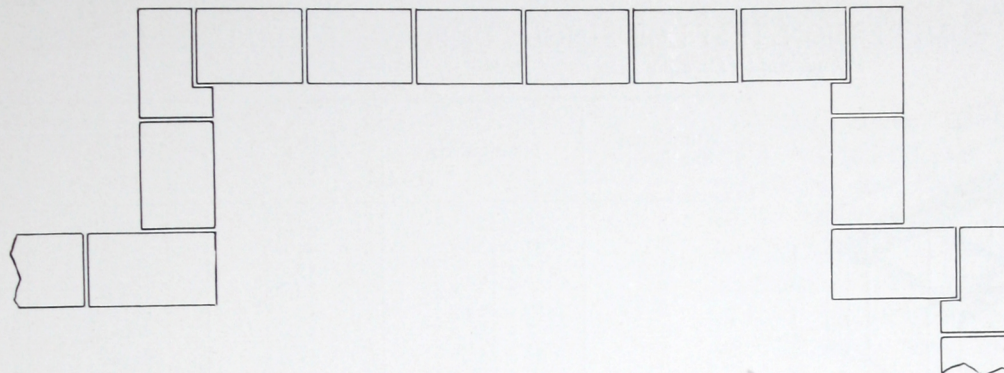


FIG. 56

Alternate courses of a typical bay window wall. Note that a true bond is preserved at all points in the wall without any cutting of tile. Bay windows of other dimensions are just as easily laid out along similar lines. This particular size is given as a suggestion only.

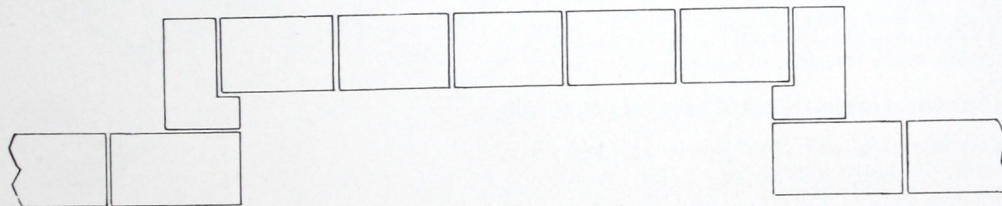


FIG. 57

Alternate courses of a 12" chimney recess. Preserves a true bond without cutting of tile. This makes a chimney which projects 12" from face of house wall. The chimney itself should be of brick. Do not forget flue lining.

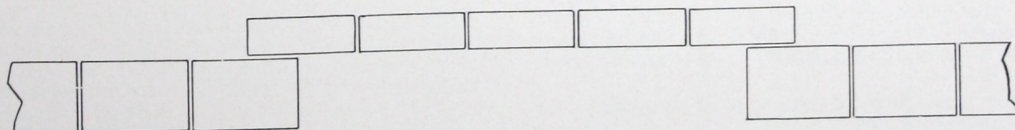


FIG. 58

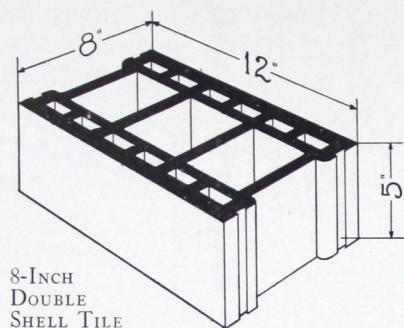
Alternate courses of an 8" chimney recess. Similar to above but projects only 4" from face of wall.



## Results of Tests Prove that this Natco Double Shell Tile will Withstand Many Times the Load that is Required in the Average Building

### COMPRESSION TESTS OF SINGLE UNITS OF DOUBLE SHELL TILE

Conducted by Carnegie Institute of Technology, Pittsburgh, Pa., July, 1918



8-INCH  
DOUBLE  
SHELL TILE

Number of Specimen	Nominal size	Net Area (Sq. In.)	Maximum Load	
			Total (Lbs.)	Units (Lbs. per Sq. In.)
1	8" x 12" x 5"	44.25	299450	6770
2	8" x 12" x 5"	44.25	258580	5840
3	8" x 12" x 5"	44.25	285280	6450
4	6" x 12" x 5"	39.75	238000	5990
5	6" x 12" x 5"	39.75	311650	7840
6	6" x 12" x 5"	39.75	270510	6810
7	8" x 12" x 5"	44.25	224760	5080
8	6" x 12" x 5"	39.75	252050	6340

NOTE:—Specimens No. 7 and No. 8 were glazed. Specimen No. 7 showed a detail failure at one end due likely to improper bedding which no doubt explains the low result obtained.

All tile were tested on end and were bedded in plaster of paris on top and bottom, the plaster of paris cap extending over the webs so that the full cross-section of the tile was in bearing. The sizes tested were 8" x 12" x 5" and 6" x 12" x 5". The unit loads were based on the net area.

### RESULT OF COMPRESSION TESTS ON WALL SECTIONS

Conducted by Carnegie Institute of Technology, Pittsburgh, Pa., Aug. 27, 1918

Tests made for BUILDING CODE COMMISSION, City of Pittsburgh

Four walls were built and tested at age of 28 days.  
Tile laid on end, as shown, by an experienced bricklayer.  
Mortar joints  $\frac{3}{8}$  of an inch, 1 part cement, 1-10 part hydrated lime, 2 parts sharp sand—by loose volume.  
Mortar specimens 28 days old tested 358 lbs. per sq. in. in tension and 2,900 lbs. per sq. in. compression; being respectively standard briquettes and cylinders 2 in. in diameter and 4 in high.

Each wall built on  $\frac{1}{2}$ " steel plate; first course bedded in mortar, and plaster of paris cap placed on top just before loading.  
Tested in 500,000-lb. Olsen Machine; all loads applied at rate of 0.25" per minute.

The following are average results for two 6" walls and two 8" walls tested:

Dimensions of top course—6" wall;  $24\frac{1}{2}$ " long by  $5\frac{15}{16}$ " wide;

Area of top course—145 square inches;

Total maximum load—202,520 pounds;

Unit maximum load—1,400 pounds per square inch gross area of top course.

2,548 pounds per square inch sectional area of tile in top course.

Dimensions of top course—8" wall: 24" long by  $7\frac{3}{4}$ " wide;

Area of top course—189 square inches;

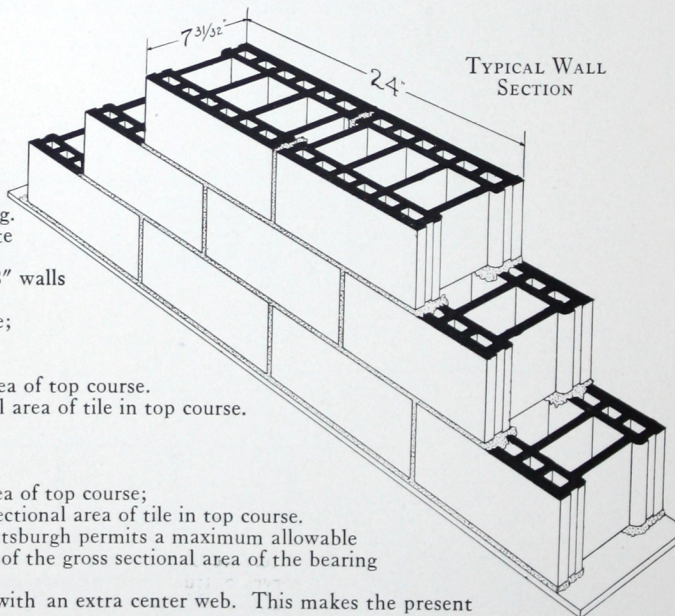
Total maximum load—206,600 pounds;

Unit Maximum load—1,090 pounds per square inch gross area of top course;

2,334 pounds per square inch of net sectional area of tile in top course.

Based on these tests the present Ordinance of the City of Pittsburgh permits a maximum allowable unit working stress of 150 pounds per square inch in compression of the gross sectional area of the bearing walls in which the tile is set with cells vertical in the wall.

Please note that all of the 8" x 12" x 5" units are now made with an extra center web. This makes the present tile stronger than that used in the above test.



## DON'TS WHICH MERIT YOUR CONSIDERATION

Don't have your hollow tile dumped from a truck, but have each size of the tile stacked by itself. This will save time and money when your masons are ready for tile, besides doing away with breakage.

Don't use too much lime in your mortar. It weakens the mortar and spoils your reputation.

Don't fail to cover up the top course of tile in a wall at quitting time. This protects your work and prevents the filling in of cells with rain or snow.

Don't use the nest of 1-inch slabs as full tile. They should be broken apart and single slabs used for bearing under joists.

Don't forget that all wooden frame work will shrink; therefore special care should be taken to thoroughly calk between all wood work and hollow tile.

Don't guess where the various sizes of tile are to be used, as we will gladly make notations of different sizes, etc. on plans if you will send them to us, or we will send our representative to see you. Remember that we are glad to give you any information, for we are just as anxious as you are to have the work satisfactory.

Don't patch up your job with brick. Natco Hollow Tile are made in proper shapes and sizes; it is therefore very seldom necessary to use brick.

Don't leave any holes or crevices on the outside or inside of the wall. Be sure all joints are well sealed.

Don't cut holes into the tile in which to frame your joists, but use the joist closure tile at ends of joists, and joist filler tile between joists. Remember that the strength of your wall depends upon thorough bearing of webs and shells, and every hole weakens the wall, and is an easy way for dampness to penetrate.



## Tables for Determining Height and Length of Wall

THESE tables are not only for the use of the architect in planning the job, but should be referred to frequently by the masonry contractor during the actual construction of the walls. They are useful for planning and building the openings, as well as determining the general dimensions of the walls.

Course No.	Height	Course No.	Height	Course No.	Height
1	— 5 $\frac{3}{8}$ "	31	13'—10 $\frac{5}{8}$ "	61	27'— 3 $\frac{7}{8}$ "
2	—10 $\frac{3}{4}$ "	32	14'— 4"	62	27'— 9 $\frac{1}{4}$ "
3	1'— 4 $\frac{1}{8}$ "	33	14'— 9 $\frac{3}{8}$ "	63	28'— 2 $\frac{7}{8}$ "
4	1'— 9 $\frac{1}{2}$ "	34	15'— 2 $\frac{3}{4}$ "	64	28'— 8 $\frac{1}{4}$ "
5	2'— 2 $\frac{7}{8}$ "	35	15'— 8 $\frac{1}{8}$ "	65	29'— 1 $\frac{5}{8}$ "
6	2'— 8 $\frac{1}{4}$ "	36	16'— 1 $\frac{1}{2}$ "	66	29'— 7"
7	3'— 1 $\frac{5}{8}$ "	37	16'— 6 $\frac{7}{8}$ "	67	30'— 0 $\frac{3}{8}$ "
8	3'— 7"	38	17'— 0 $\frac{1}{4}$ "	68	30'— 5 $\frac{3}{4}$ "
9	4'— 0 $\frac{3}{8}$ "	39	17'— 5 $\frac{5}{8}$ "	69	30'—10 $\frac{1}{8}$ "
10	4'— 5 $\frac{3}{4}$ "	40	17'—11"	70	31'— 4 $\frac{1}{4}$ "
11	4'—11 $\frac{1}{8}$ "	41	18'— 4 $\frac{3}{8}$ "	71	31'— 9 $\frac{5}{8}$ "
12	5'— 4 $\frac{1}{2}$ "	42	18'— 9 $\frac{3}{4}$ "	72	32'— 3"
13	5'— 9 $\frac{7}{8}$ "	43	19'— 3 $\frac{1}{8}$ "	73	32'— 8 $\frac{3}{8}$ "
14	6'— 3 $\frac{1}{4}$ "	44	19'— 8 $\frac{1}{2}$ "	74	33'— 1 $\frac{3}{4}$ "
15	6'— 8 $\frac{5}{8}$ "	45	20'— 1 $\frac{7}{8}$ "	75	33'— 7 $\frac{1}{8}$ "
16	7'— 2"	46	20'— 7 $\frac{1}{4}$ "	76	34'— 0 $\frac{1}{2}$ "
17	7'— 7 $\frac{3}{8}$ "	47	21'— 0 $\frac{5}{8}$ "	77	34'— 5 $\frac{7}{8}$ "
18	8'— 0 $\frac{3}{4}$ "	48	21'— 6"	78	34'—11 $\frac{1}{4}$ "
19	8'— 6 $\frac{1}{8}$ "	49	21'—11 $\frac{3}{8}$ "	79	35'— 4 $\frac{5}{8}$ "
20	8'—11 $\frac{1}{2}$ "	50	22'— 4 $\frac{3}{4}$ "	80	35'—10"
21	9'— 4 $\frac{7}{8}$ "	51	22'—10 $\frac{1}{8}$ "	81	36'— 3 $\frac{3}{8}$ "
22	9'—10 $\frac{1}{4}$ "	52	23'— 3 $\frac{1}{2}$ "	82	36'— 8 $\frac{3}{4}$ "
23	10'— 3 $\frac{5}{8}$ "	53	23'— 8 $\frac{7}{8}$ "	83	37'— 2 $\frac{1}{8}$ "
24	10'— 9"	54	24'— 2 $\frac{1}{4}$ "	84	37'— 7 $\frac{1}{2}$ "
25	11'— 2 $\frac{3}{8}$ "	55	24'— 7 $\frac{5}{8}$ "	85	38'— 0 $\frac{7}{8}$ "
26	11'— 7 $\frac{3}{4}$ "	56	25'— 1"	86	38'— 6 $\frac{1}{4}$ "
27	12'— 1 $\frac{1}{8}$ "	57	25'— 6 $\frac{3}{8}$ "	87	38'—11 $\frac{5}{8}$ "
28	12'— 6 $\frac{1}{2}$ "	58	25'—11 $\frac{3}{4}$ "	88	39'— 5"
29	12'—11 $\frac{7}{8}$ "	59	26'— 5 $\frac{1}{8}$ "	89	39'—10 $\frac{3}{8}$ "
30	13'— 5 $\frac{1}{4}$ "	60	26'—10 $\frac{1}{2}$ "	90	40'— 3 $\frac{3}{4}$ "

While these tables have been prepared as a ready reference and will be found very helpful, it should be remembered that it is always possible to vary the thickness of the mortar joints and thereby change the dimensions slightly.

### HEIGHT TABLE

8" x 12" x 5" Tile— $\frac{3}{8}$ " Joints

The table at the left is used to determine the height of walls which will best lay up without cutting tile, using  $\frac{3}{8}$ " bed joint. For instance, should you desire to build a wall 17' high, you will note by referring to the table that it will require 38 courses.

### LENGTH TABLE

8" x 12" x 5" Tile— $\frac{3}{8}$ " Joints

The table at the right shows the length of walls that can be best laid up without cutting tile, using  $\frac{3}{8}$ " vertical mortar joint. For instance, should you desire a wall 35' long, by referring to the table you will find that it will require 34 tile. By humoring or varying the mortar joints, this dimension can be varied slightly.

No.—Tile	Length	No.—Tile	Length	No.—Tile	Length
1	1'— 0 $\frac{3}{8}$ "	16	16'— 6"	31	31'—11 $\frac{5}{8}$ "
1 $\frac{1}{2}$	1'— 6 $\frac{1}{2}$ "	16 $\frac{1}{2}$	17'— 0 $\frac{1}{8}$ "	31 $\frac{1}{2}$	32'— 5 $\frac{3}{4}$ "
2	2'— 0 $\frac{3}{4}$ "	17	17'— 6 $\frac{3}{8}$ "	32	33'— 0"
2 $\frac{1}{2}$	2'— 6 $\frac{7}{8}$ "	17 $\frac{1}{2}$	18'— 0 $\frac{1}{2}$ "	32 $\frac{1}{2}$	33'— 6 $\frac{1}{8}$ "
3	3'— 1 $\frac{1}{8}$ "	18	18'— 6 $\frac{3}{4}$ "	33	34'— 0 $\frac{3}{8}$ "
3 $\frac{1}{2}$	3'— 7 $\frac{1}{4}$ "	18 $\frac{1}{2}$	19'— 0 $\frac{7}{8}$ "	33 $\frac{1}{2}$	34'— 6 $\frac{1}{2}$ "
4	4'— 1 $\frac{1}{2}$ "	19	19'— 7 $\frac{1}{8}$ "	34	35'— 0 $\frac{3}{4}$ "
4 $\frac{1}{2}$	4'— 7 $\frac{5}{8}$ "	19 $\frac{1}{2}$	20'— 1 $\frac{1}{4}$ "	34 $\frac{1}{2}$	35'— 6 $\frac{7}{8}$ "
5	5'— 1 $\frac{7}{8}$ "	20	20'— 7 $\frac{1}{2}$ "	35	36'— 1 $\frac{1}{8}$ "
5 $\frac{1}{2}$	5'— 8"	20 $\frac{1}{2}$	21'— 1 $\frac{5}{8}$ "	35 $\frac{1}{2}$	36'— 7 $\frac{1}{4}$ "
6	6'— 2 $\frac{1}{4}$ "	21	21'— 7 $\frac{7}{8}$ "	36	37'— 1 $\frac{1}{2}$ "
6 $\frac{1}{2}$	6'— 8 $\frac{3}{8}$ "	21 $\frac{1}{2}$	22'— 2"	36 $\frac{1}{2}$	37'— 7 $\frac{5}{8}$ "
7	7'— 2 $\frac{5}{8}$ "	22	22'— 8 $\frac{1}{4}$ "	37	38'— 1 $\frac{7}{8}$ "
7 $\frac{1}{2}$	7'— 8 $\frac{3}{4}$ "	22 $\frac{1}{2}$	23'— 2 $\frac{3}{8}$ "	37 $\frac{1}{2}$	38'— 8"
8	8'— 3"	23	23'— 8 $\frac{5}{8}$ "	38	39'— 2 $\frac{1}{4}$ "
8 $\frac{1}{2}$	8'— 9 $\frac{1}{8}$ "	23 $\frac{1}{2}$	24'— 2 $\frac{3}{4}$ "	38 $\frac{1}{2}$	39'— 8 $\frac{3}{8}$ "
9	9'— 3 $\frac{3}{8}$ "	24	24'— 9"	39	40'— 2 $\frac{5}{8}$ "
9 $\frac{1}{2}$	9'— 9 $\frac{1}{2}$ "	24 $\frac{1}{2}$	25'— 3 $\frac{1}{8}$ "	39 $\frac{1}{2}$	40'— 8 $\frac{3}{4}$ "
10	10'— 3 $\frac{3}{4}$ "	25	25'— 9 $\frac{3}{8}$ "	40	41'— 3"
10 $\frac{1}{2}$	10'— 9 $\frac{7}{8}$ "	25 $\frac{1}{2}$	26'— 3 $\frac{1}{2}$ "	40 $\frac{1}{2}$	41'— 9 $\frac{1}{8}$ "
11	11'— 4 $\frac{1}{8}$ "	26	26'— 9 $\frac{3}{4}$ "	41	42'— 3 $\frac{3}{8}$ "
11 $\frac{1}{2}$	11'—10 $\frac{1}{4}$ "	26 $\frac{1}{2}$	27'— 3 $\frac{7}{8}$ "	41 $\frac{1}{2}$	42'— 9 $\frac{1}{2}$ "
12	12'— 4 $\frac{1}{2}$ "	27	27'—10 $\frac{1}{8}$ "	42	43'— 3 $\frac{3}{4}$ "
12 $\frac{1}{2}$	12'—10 $\frac{5}{8}$ "	27 $\frac{1}{2}$	28'— 4 $\frac{1}{4}$ "	42 $\frac{1}{2}$	43'— 9 $\frac{7}{8}$ "
13	13'— 4 $\frac{7}{8}$ "	28	28'—10 $\frac{1}{2}$ "	43	44'— 4 $\frac{1}{8}$ "
13 $\frac{1}{2}$	13'—11"	28 $\frac{1}{2}$	29'— 4 $\frac{5}{8}$ "	43 $\frac{1}{2}$	44'—10 $\frac{1}{4}$ "
14	14'— 5 $\frac{1}{4}$ "	29	29'—10 $\frac{3}{8}$ "	44	45'— 4 $\frac{1}{2}$ "
14 $\frac{1}{2}$	14'—11 $\frac{3}{8}$ "	29 $\frac{1}{2}$	30'— 5"	44 $\frac{1}{2}$	45'—10 $\frac{5}{8}$ "
15	15'— 5 $\frac{3}{8}$ "	30	30'—11 $\frac{1}{4}$ "	45	46'— 4 $\frac{7}{8}$ "
15 $\frac{1}{2}$	15'—11 $\frac{3}{4}$ "	30 $\frac{1}{2}$	31'— 5 $\frac{3}{8}$ "	45 $\frac{1}{2}$	46'—11"



# NATCO HOLLOW TILE FOR EVERY TYPE OF BUILDING



A distinctive home of Natco Glazed Tex-Tile at Clarendon, Va.



A cozy, economical bungalow of Natco Glazed Tex-Tile at New Kensington, Pa.



This apartment at Trenton, Mich., shows how well Natco Glazed Tex-Tile is adapted for this type of construction.



A fire safe, permanent Natco Glazed Tex-Tile home near Saxonburg, Pa.



Repair-free, enduring Natco Glazed Tex-Tile Bungalow at Holly, Mich.



A bungalow type home of Natco Glazed Tex-Tile at Poseyville, Indiana, that combines permanence, beauty, economy and fire safety.



Home at Jessup, Maryland, built of Natco Double Shell Unglazed Tile that has proved economical and satisfactory.



A repair-free, fire safe single car garage of Natco Double Shell Glazed Tex-Tile at Oakmont, Pa.

ALL OF THE NATCO DOUBLE SHELL TILE HOMES SHOWN ABOVE ARE FIRE SAFE, DRY AND COMFORTABLE, FREE FROM DAMPNESS, PAINTING AND REPAIRS, WITH DEFINITE SAVINGS IN INSURANCE, HEATING AND UPKEEP.



# NATCO HOLLOW TILE FOR EVERY TYPE OF BUILDING



A livable as well as lasting home of Natco Glazed Tex-Tile in Catonsville, Md.



Substantial fire safe home of Natco Glazed Tex-Tile at Canonsburg, Pa.



Hospital building of Natco Glazed Tex-Tile at Wilberforce University, Xenia, O.



Bungalow at Bogota, N. J., with walls of Natco Glazed Tex-Tile.



A bungalow type of Natco Glazed Tex-Tile at Clarendon, Va.



An excellent type of suburban home of Natco Glazed Tex-Tile at Plainfield, N. J.



An economical bungalow of Natco Glazed Tex-Tile at Halethorpe, Md.



A fire safe, easily heated two-car garage of Natco Glazed Double Shell Tile at Manistee, Mich.

TYPICAL NATCO GLAZED TEX-TILE HOMES WHERE BEAUTY, DURABILITY, RESISTANCE TO FIRE AND DECAY, REASONABLE FIRST COST AND LOW HEATING COST ARE COMBINED TO A REMARKABLE DEGREE. FIRST COST IS LAST COST.



# NATCO HOLLOW TILE FOR EVERY TYPE OF BUILDING



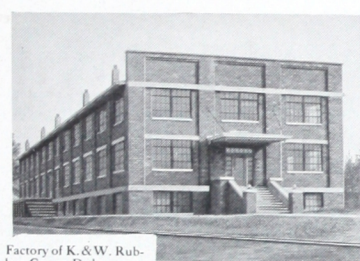
Public Garage of Natco Glazed Double Shell Tile at Oakmont, Pa.



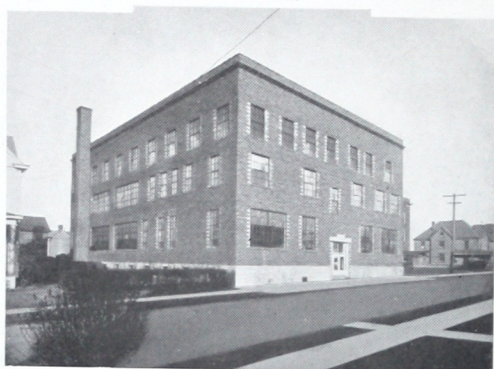
St. Regis Church, St. Regis Falls, N. Y. constructed of Natco Double Shell Glazed Tex-Tile



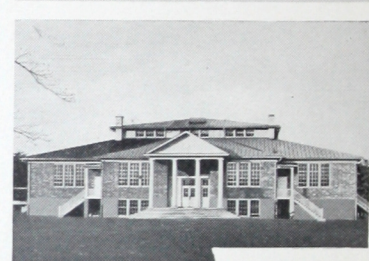
Natco Glazed Double Shell Tile was used for the walls of this public garage at Everett, Illinois.



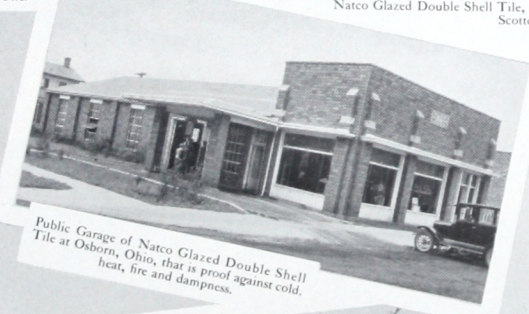
Factory of K. & W. Rubber Co. at Delaware, Ohio, of Natco Glazed Double Shell Tile.



Natco Glazed Double Shell Tile, Mennonite Publishing Co. Building, Scottsdale, Pa.



Public School in Gloucester, Va., of Natco Glazed Double Shell Tile.



Public Garage of Natco Glazed Double Shell Tile at Osborn, Ohio, that is proof against cold, heat, fire and dampness.



Public Garage of Natco Glazed Double Shell Tile at Roadhouse, Illinois, which is attractive, durable and economical.



How well Natco Glazed Double Shell Tile is adapted for mill building construction is shown by this illustration of the Sunray Stove Company, Delaware, O.



Factory Building of Natco Glazed Double Shell Tile. Carbo-Oxygen Company, Pitsaun, Pa.

REPRESENTING THE UTMOST IN STRUCTURAL SOLIDITY AND STRENGTH, SAFETY AGAINST FIRE WITH LESSENNED REPAIR, REPLACEMENT, PAINT, DEPRECIATION AND FUEL BILLS, NATCO DOUBLE SHELL TILE IS IDEAL FOR PUBLIC AND COMMERCIAL BUILDINGS







